

PHLOX DRUMMONDII (POLEMONIACEAE) REVISITED

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ABSTRACT

A taxonomic overview of the *Phlox drummondii* complex is presented, this after a biosystematic study of the group that appeared in 1962. Over the intervening 37 year period, I have examined numerous field populations of the taxa concerned, and studied anew the large assemblage of collections at LL, TEX, including numerous new acquisitions. Contrary to my original study which treated the *P. drummondii* complex as composed of six varieties distributed among two subspecies, I now treat the group as composed of but five varieties; all of these intergrade to some, often considerable, extent near regions of overlap or close contact, and none appears deserving of subspecific status. The taxa recognized are: var. *drummondii* (including var. *goldsmithii* and var. *wilcoxiana*); var. *johnstonii*, newly described since my initial treatment; var. *littoralis* (including var. *glabriflora*); var. *peregrina* (a horticultural variant introduced by wildflower enthusiasts and persisting along roadsides); var. *mcallisteri*; and var. *tharpii*. Distribution maps of the taxa are provided and one new combination, *P. drummondii* var. *johnstonii* (Wherry) B.L. Turner, *stat. nov.*, proved necessary.

KEY WORDS: *Phlox drummondii*, Polemoniaceae, taxonomy, nomenclature

INTRODUCTION

Phlox drummondii is a common garden annual, having been taken into cultivation in the early part of the 19th century from seed collected in south-central Texas by Drummond, these delivered to KEW where they were grown (Kelly 1915). The original description (published with a colored plate) was mostly made from garden grown material. Subsequent collections by numerous workers revealed a wide array of populational variants in central Texas, their presence first called to the fore (in a revisional sense) by Brand (1907), this expanded upon by Whitehouse (1945), Wherry (1950), and treated biosystematically by Erbe & Turner (1962), all of this reevaluated by Wherry (1966) in his treatment of the group for the Flora of Texas. In connection with a forthcoming *Atlas of the Vascular Plants of Texas* (Turner & Nichols, in prep.) I have had to evaluate the complex yet again and present here a

somewhat different interpretation of the group than that rendered in 1962, this largely due to considerable field work thereafter and thorough study of the numerous new collections assembled since. All of the herbarium specimens upon which the present study is based are housed at LL, TEX, and all have been duly annotated according to my perception of their closest relationship (*i.e.*, I did not attempt to show by symbols the intergradational specimens, so numerous their number). The following provides a means for the recognition of the typical elements of the taxa concerned; following this a brief accounting of the nomenclature and biology of each is rendered.

Key to the infraspecific taxa of *Phlox drummondii*

(All of the taxa intergrade to some extent in regions of contact, except for the isolated endemic, *P. drummondii* var. *johnstonii*, and introduced cultivar populations of var. *peregrina*)

1. Populations mostly local, highly variable, especially in flower color, varying from white to pink, to lavender and crimson; introduced, but persistent, cultivars.
.....var. *peregrina*
1. Populations relatively uniform, especially in flower color (exceptional hybrid individuals of *P. drummondii* × *P. cuspidata* excluded).
 2. Corolla tubes glabrous, or if pubescent the corollas purplish-pink with well-developed white eyes and lobes 6-8 mm long; southern Texas. var. *littoralis*
 2. Corolla tubes pubescent, the corollas highly variable but well-defined white eyes absent and lobes mostly 8-12 mm long; south-central and north-central Texas.
 3. Corollas vivid-red or crimson to deep lavender; mid-stem leaves mostly sessile or abruptly tapered at the base. var. *drummondii*
 3. Corollas various shades of pink or lavender; mid-stem leaves mostly gradually tapered below.
 4. Corollas with tubes mostly 18-25 mm long; plants of the southern panhandle region of Texas (Fisher, Kent, and Stonewall counties), occurring in red dune sands dominated by oak shinnery. var. *johnstonii*
 4. Corollas with tubes mostly 10-18 mm long; plants not in the southern panhandle regions of Texas.
 5. Mature pedicels mostly 2-5 mm long; central and north-central Texas. var. *mcallisteri*
 5. Mature pedicels mostly (4-)5-12 mm long; south-central Texas.
..... var. *tharpii*

Phlox drummondii Hook. var. *drummondii*

My interpretation of this taxon is somewhat broader than that espoused by Erbe & Turner (1962) and Wherry (1967), including *Phlox drummondii* var. *goldsmithii* (Whitehouse) Erbe of the former (this also championed by Wherry 1967) and *P. drummondii* var. *wilcoxiana* Erbe (the latter also retained by Wherry). Attempts to disentangle varieties *goldsmithii* and *wilcoxiana*, either in the field and/or in the herbarium seem futile at best, although this or that population and/or assemblage of

individuals from a given region might suggest that such a segregation is warranted. The variety *drummondii*, as here interpreted, is a melange of populations, peripheral elements of which grade into closely adjacent populations of varieties *tharpaii* (Whitehouse) Erbe, *mcallisteri* (Whitehouse) Shinnery, and *littoralis* Cory, as might be surmized from Figure 1. Wherry (1967) largely distinguished var. *wilcoxiana* from var. *drummondii* by its bright red corollas having a "dark red eye-ring or star, the pigment persistent." I found this character to be inconsistent, both in the field and in herbaria, as did Erbe & Turner (1962) who commented upon its likely derivation through gene flow from *P. cuspidata* (cf. also the account of Levin 1967), or perhaps through introgression from the allopatric *P. drummondii* var. *tharpaii*.

Phlox drummondii Hook. var. *johnstonii* (Wherry) B.L. Turner, *stat. nov.*
 BASIONYM: *Phlox johnstonii* Wherry, *Wrightia* 2:198. 1961. *Phlox drummondii* Hook. subsp. *johnstonii* (Wherry) Wherry, *Sida* 1:250. 1964.

Wherry, as noted in the above synonymy, reduced his initial taxon to subspecific rank under *Phlox drummondii* with the following observation (Wherry 1967): "Since this taxon differs from type-*Drummondii* [sic] to about the same extent as the others, it is now being classified as an additional subspecies."

In his original description, Wherry noted that the taxon was most closely related to var. *mcallisteri* and might be "considered a species, subspecies, or variety, as individually preferred." I treat the subspecies as a clustering category (cf. Erbe & Turner 1962) as do yet other systematists of my ilk.

Typical elements of var. *johnstonii* differ from var. *mcallisteri* in having a more open inflorescence, the flowers borne upon longer pedicels and having longer corolla tubes, the latter also emphasized by Wherry (1967). The taxon is a local endemic in the area concerned, occurring on dune-like sands dominated by dwarf oaks ("shinnery," as noted on label data of four of the five collections housed at LL, TEX).

Phlox drummondii Hook. var. *littoralis* Cory, *Rhodora* 39:421. 1937.

Phlox drummondii Hook. subsp. *glabriflora* Brand, 1907.

Phlox glabriflora (Brand) Whitehouse, 1935.

Phlox littoralis (Cory) Whitehouse, 1945.

Phlox glabriflora (Brand) Whitehouse subsp. *littoralis* (Cory) Wherry, 1955.

Phlox drummondii Hook. var. *glabriflora* (Brand) Erbe, 1962.

This taxon has a checkered history, as amply attested to by the account of Wherry (1967) who treated it as a subspecies of *Phlox glabriflora*, this having been treated as a variety of *P. drummondii* by Erbe & Turner (1962) and by Cory (1937), but as a species by Whitehouse (1945). As noted in the above synonymy, Brand (1907) did not account for the taxon, having little material of the typical element; most of this he subsumed under his simplistic concept of *P. drummondii* subsp. *glabriflora* (i.e., specimens from southernmost Texas having glabrous corollas were given this name). If treated as a distinct species, the correct name for the taxon concerned is *P. littoralis*; if treated as a subspecies, the correct name is *P. drummondii* subsp. *glabriflora*; if treated as a variety, however, its correct name is *P. drummondii* var. *littoralis*, since

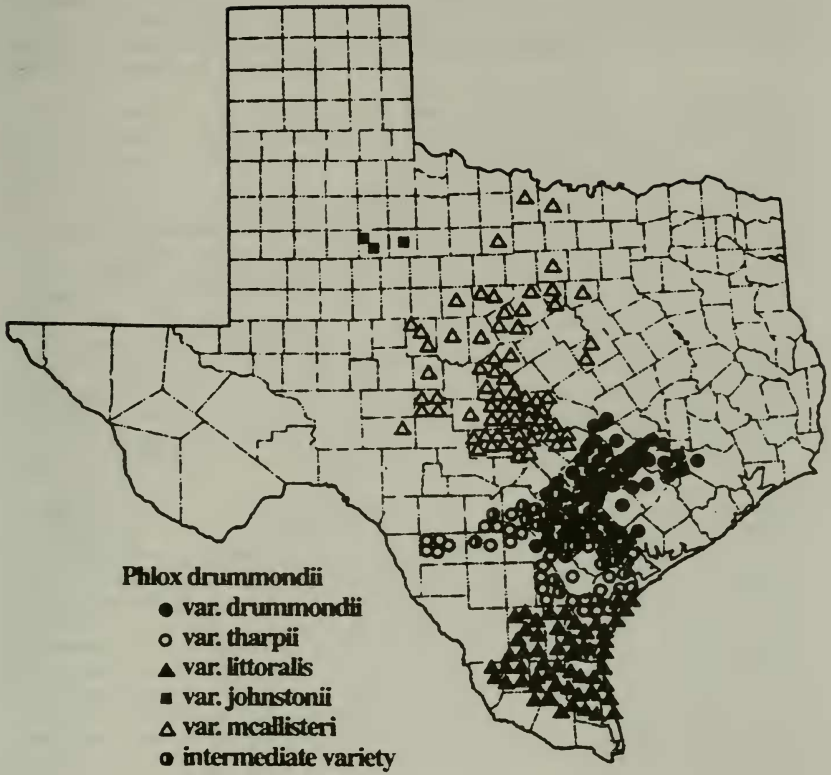


Fig. 1. Distribution of natural varieties of *Phlox drummondii*.

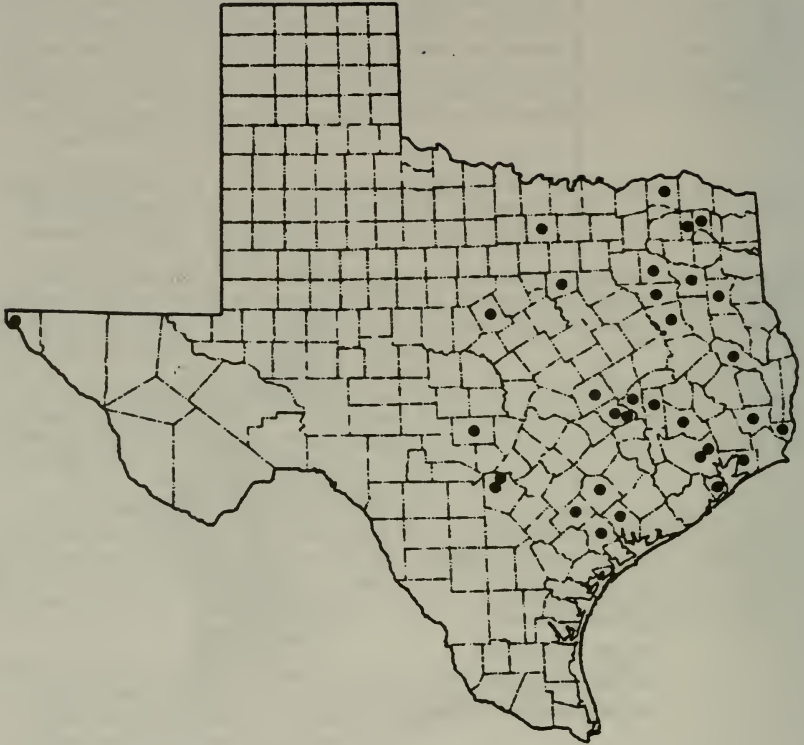


Fig. 2. Distribution of introduced populations of *Phlox drummondii* var. *peregrina*.

this is the earliest name at the rank concerned, the var. *glabriflora* having been proposed by Erbe in 1962. In short, if var. *littoralis* and var. *glabriflora* are treated as a single taxonomic entity, the correct name at the varietal level is var. *littoralis*; if treated as a subspecies, the correct name is var. *glabriflora*; if treated as a distinct species, the name is *P. glabriflora*.

I do not consider var. *glabriflora* to be sufficiently distinct from var. *littoralis* so as to be recognized. The latter appears to be but coastal populational forms having mostly pubescent corolla tubes, there being considerable variation in the latter character, both across the range of the taxon and along regions of contact where the typical populational elements (of var. *glabriflora*) grade into the typical populational elements of var. *littoralis*. Whitehouse (1935) recognized *Phlox glabriflora* as distinct from *P. littoralis*, noting in her justification for their recognition, that "along the boundaries [of the two species], various forms with pubescent corolla tubes show evidence of hybridization [with what, is not mentioned] and these will not be reported [upon] without further investigation." In her last treatment of the group (Whitehouse 1945), however, she retained both species, without comment, except to note that *P. littoralis* is evidently "of more recent origin than the other annuals" and that "it is found only on the beach sands, being abundant in some regions. It starts blooming early in the year, and some plants continue until late summer. The plants along the coast show little variation but on the inner boundary of their range there is some variation as well as some possible evidence of hybridization [again, with what is not mentioned]."

Erbe & Turner (1962) in their biosystematic study of the *Phlox drummondii* complex treated var. *glabriflora* and var. *littoralis* as distinct, positioning both in subsp. *glabriflora*. Field and herbarium studies since this time lead me to believe that there is little justification in their treatment either as distinct varieties or as belonging to a distinct subspecies, so completely do they intergrade across regions of near contact, presumably as a result of past gene flow between yet other elements of *P. drummondii*. Since the northern coastal dunes, to which elements of var. *littoralis* are largely confined, are relatively recent in age (formed from offshore barrier islands ca. 6000 years ago, cf. Miller *et al.* 1968), Whitehouse is probably correct in her assumption that the populations concerned are of very recent origin, whether out of gene flow from other elements of *P. drummondii* or by gradual selection over generations from glabrous-flowered members of the var. *littoralis* complex remains moot.

Phlox drummondii Hook. var. *mcallisteri* (Whitehouse) Shinnery, Field & Lab. 19:127. 1951.

Phlox mcallisteri Whitehouse, 1945.

Phlox drummondii Hook. subsp. *mcallisteri* (Whitehouse) Wherry, 1956.

My concept of this taxon is essentially the same as that of Erbe & Turner (1962) and Wherry (1966). The variety is largely confined to sandy soils of forested or deforested areas in north-central Texas, as noted by Whitehouse (1945), who treated the taxon as specifically distinct. Wherry (1966), correctly notes that in view of its relative isolation "the paucity of morphological distinctions [between var. *mcallisteri* and yet other varieties] is surprising." In total characters, however, it most closely resembles the varieties *johustonii* and *tharpüi*. Levin & Schmidt (1985) give a detailed

analysis of a region of intergradation between var. *mcallisteri* and var. *drummondii*; whether this is due to primary intergradation or secondary intergradation (i.e., hybridization) remains moot, in my opinion.

Phlox drummondii Hook. var. *tharpü* (Whitehouse) Erbe, Amer. Midl. Naturalist 67:280. 1962.

Phlox tharpü Whitehouse, 1945.

Phlox glabriflora (Brand) Whitehouse subsp. *tharpü* (Whitehouse) Wherry, 1955.

My interpretation of this taxon is about the same as that of Erbe & Turner (1962) and Wherry (1966). The latter author recognized var. *tharpü* as part of his concept of *Phlox glabriflora* in his 1955 treatment but acquiesced to the treatment of Erbe & Turner in his 1966 reevaluation of the taxon.

Phlox drummondii Hook. var. *peregrina* Shinnery, Field & Lab. 19:127. 1951.

As noted by Wherry (1966) and yet others, this name has been provided for artificially established populations of various cultivars. It mostly occurs in locally bounded populations of several hundred to thousands of individuals along roadsides, these often planted by wildflower enthusiasts. Such populations also occur in yet other countries (Ali 1971), including those of tropical montane Africa, as I personally noted during my travels to this region in 1956. In Texas, the taxon is quite common, occurring as isolated, but independently established populations, over a broad region (Figure 2).

Purists might prefer to use the earliest cultivar name provided for this taxon, that being *Phlox drummondii radowtzii* Regel, first proposed in 1865, this based upon garden grown plants having rose-colored, white-striped, funnellform corollas, as noted by Whitehouse (1945). Its application to the established cultivar populations of central Texas (or elsewhere) is ill-advised, although, technically, perhaps correct. At least I like the Shinnery's application on pragmatic grounds, there being few funnellform corollas seen in the Texas populations, although occasional plants with somewhat broadened tubes do occur in this or that population.

LITERATURE CITED

- Ali, S.I. 1971. *Phlox*, in Polemoniaceae. *Fl. West Pakistan* 8:3.
- Brand, A. 1907. *Phlox*, in Polemoniaceae. Engler's *Das Pflanzenreich* 4:250. 70-71.
- Erbe, L. & B.L. Turner. 1962. A biosystematic study of the *Phlox cuspidata*-*Phlox drummondii* complex. Amer. Midl. Naturalist 67:257-281.
- Kelly, J.P. 1915. Cultivated varieties of *Phlox drummondii*. J. New York Bot. Gard. 16:179-191.
- Levin, D.A. 1967. Hybridization between annual species of *Phlox*: population structure. Amer. J. Bot. 54:1122-1130.

- Levin, D.A. & K.P. Schmidt. 1985. Dynamics of a hybrid zone in *Phlox*: an experimental demographic investigation. *Amer. J. Bot.* 72:1404-1409.
- Miller, H.E., T.J. Mabry, B.L. Turner, & W.W. Payne. 1968. Intraspecific variation of sesquiterpene lactones in *Ambrosia psilostachya* (Compositae). *Amer. J. Bot.* 55:316-324.
- Wherry, E.T. 1955. *The Genus Phlox*. Assoc. Morris Arboretum, Philadelphia, Pennsylvania.
- Wherry, E.T. 1966. *Phlox*, in *Flora of Texas* 1:302-321.
- Whitehouse, E. 1935. Notes on Texas phloxes. *Bull. Torrey Bot. Club* 62:381-386.
- Whitehouse, E. 1945. Annual *Phlox* species. *Amer. Midl. Naturalist* 34:388-401.